LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES

OFFICE OF FISHERIES
INLAND FISHERIES DIVISION

PART VI -A

WATERBODY MANAGEMENT PLAN SERIES

LAKE CONCORDIA

LAKE HISTORY & MANAGEMENT ISSUES

CHRONOLOGY

February 2008 - Prepared by
Mike Ewing, Biologist Manager, District 4

2010 – Revised by
Evan Thames Biologist Manager, District 4

2011 – Revised by
Richard Moses, Biologist Manager, District 3
Lynn Mathews, Biologist Supervisor, District 3
Richard McGuffee, Biologist III, District 3

May 2015 – Revised by
Richard Moses, Biologist Manager, District 3
Richard McGuffee, Biologist Supervisor, District 3
Shelby Richard, Biologist II, District 3

TABLE OF CONTENTS

LAKE HISTORY

General Information

Date reservoir formed
Lake Concordia is a natural lake formed when the Mississippi River changed its course prior to recorded history (dates back to first Spanish explorers).

Impoundment
Lake Concordia was permanently cut off from river influence when the Mississippi River mainline levees were built by the U. S. Army Corps of Engineers following the Flood Control Act of 1927.

Ownership - State of Louisiana owns the water bottoms and the Louisiana Department of Wildlife & Fisheries (LDWF) manages the fish and wildlife resources.

Size
1,100 acres

Water shed
5,702 acres (ratio 5:1)

Pool stage
48.5 ft. MSL (mean sea level)

Parish located
Concordia - Lat. 31.673611; Long. 91.501389

Drawdown description
Time to achieve drawdown – approximately 40 days

Spillway
Original Outlet Structure was built in 1948 and consisted of one 4’ diameter pipe with an invert elevation of 46.0 ft. MSL. It was replaced with a second structure, built in 1975 that consist of one 5’ pipe with invert at 42.0 ft. MSL and concrete weir with one 5’x 5’ gate to raise elevation to 48.5 ft. MSL with gate closed.

Condition – Good

Flow rate – approximately 200 cubic feet per second

Sluiceway- None

Who controls
The Concordia Parish Police Jury is the duly authorized entity which operates and maintains the water control structure.

Lake Authority

The Concordia Parish Police Jury is the legal authority for Lake Concordia.

Concordia Parish Police Jury passed a resolution on August 25, 1975 requesting the Department of Public Works, State of Louisiana prepare the plans and furnish the engineering supervision and provide funding to construct a control structure in the Cocodrie Outfall Channel for Lake Concordia in Concordia Parish, Louisiana. In return, the Police Jury assumed complete responsibility for the operation, maintenance and upkeep of the control structure upon completion of the project. To review the complete resolution, see Appendix I.

Lake Association

Lake Concordia Advisory Committee appointed by Concordia Parish Police Jury, on August 28, 2006. Members include:

James W. King
Ronnie Hendricks
Johnny Patrick
William Hall
Joe Ardoin

Authorization

Under Louisiana law, parish government can appoint a panel of citizens to serve on committees in an advisory capacity. The Lake Concordia Advisory Committee fills this role with respect to fish and wildlife issues in Concordia Parish.

Access

Map with locations in Appendix II

Boat Launches

1. LDWF District 4 Office ramp (public) – Lat. 31.673611; Lon. 91.499444
2. Sportsman's Lodge (commercial) – Lat. 31.635; Lon. 91.543611
3. Oak Harbor RV Park (commercial) – Lat. 31.625278; Lon. 91.543611
4. Lakeview Lodge (commercial) – Lat. 31.617222; Lon. 91.529167

Boat docks

Sportsman's Lodge (commercial)
Lakeview Lodge (commercial)

Piers

No public fishing piers are located on the lake however numerous private piers associated with homes and camps are found on the lake.

State/Federal facilities

LDWF District IV Office was located on lake. This facility was closed in 2009.

Reefs

Two LDWF artificial reefs were placed in Lake Concordia on either side of a deep area known as the "blue-hole" and are marked with buoys at Latitude and Longitude:

Reef # 1 – Lat. 31.668833; Long. -91.508556
Reef # 2 – Lat. 31.667944; Long. -91.509778

Shoreline Development

State/National Parks
No state or federal parks are located on Lake Concordia.

Shoreline development by landowners
Lake Concordia is developed with camps and private residences along 60% of the shoreline. The remainder of the shoreline is in agriculture production consisting of row crops and cattle pastures.

Physical Description of lake

Shoreline length
17.8 miles

Timber type
Lake Concordia is an open water oxbow lake. There is a fringe of cypress trees along the shoreline of the lake.

Average depth
20 ft.

Maximum depth
50 ft.

Natural seasonal water fluctuation
Due to the small watershed, water levels are fairly stable. Generally, water levels fluctuate less than 3 feet per year.

Events / Problems

There is an ongoing debate concerning the optimal elevation of the water level. There is a general consensus among some anglers that higher water levels are better for fish production. However many of the home/camp owners along the shoreline do not like high water levels because wakes created by water craft damage piers and boat houses.

MANAGEMENT ISSUES

Aquatic Vegetation

Aquatic vegetation is not a serious problem in Lake Concordia. Submerged vegetation, primarily coontail (*Ceratophyllum demersum*) occurs in the shallow flats at the north end of the lake; water hyacinth (*Eichhornia crassipes*) is present at both ends of the lake. Common salvinia (*Salvinia minima*) has been observed in past vegetation surveys, however it has not caused problems.

A Concordia Lake vegetation survey was conducted on August 19, 2014. No significant problem vegetation existed at that time.

There was less than 50 acres of floating and emergent vegetation observed during the survey. Species present included American lotus, water hyacinth and common salvinia. Combined coverage for all species was approximately 10 acres. There was a fringe of cutgrass along the much of the shoreline. It provides erosion protection from wave action created by water recreation.

Aquatic vegetation coverage in 2015 should be minimal, and similar to amounts listed above for 2014.

Type map

Due to complaints from local users, aquatic vegetation type mapping was conducted in 1989 by Louie Richardson, an LDWF Aquatic Habitat Biologist. The only significant vegetation found was Southern naiad (Najas guadalupensis). It was treated in late summer and has not been a problem since.

A type map survey was conducted on Lake Concordia in 2005. Approximately 10 % coverage of aquatic vegetation was found. Submerged weeds included coontail, southern naiad, bladderwort (Utricularia sp.) and filamentous algae. Floating vegetation was identified as water hyacinth, alligator weed (Alternanthera philoxeroides) and water primrose (Ludwigia sp.). Emergent vegetation along the shoreline was primarily giant cutgrass (Zizaniopsis miliacea). See Appendix III.

Biomass

Treatment history by year available

Biological

Salvinia weevils (*Cyrtobagous salviniae*) were released in 2007 to help control common salvinia. There is no evidence that the weevils survived. There was no common salvinia or evidence of the weevils in the lake as of the spring of 2010. In the fall of 2011, no common salvinia was observed in the lake. A small amount of salvinia was observed in the 2014 vegetation survey.

Chemical

LDWF spray crews utilize contact herbicide applications as periodic complaints are received from the public. A few residential complaints concerning giant cutgrass (*Zizaniopsis miliacea*), water hyacinth and alligator weed occur periodically. No spaying was conducted in 2011, 2012, or 2013. Ninety acres were sprayed in 2014. For a complete summary of herbicide applications see Table 1.

Table 1. Herbicide applications on Lake Concordia, Louisiana.

Year	Gallons	Acres	Vegetation
2005	12.50	25	Water Hyacinth, Pennywort
2009	20.00	40	Water Hyacinth, Pennywort
2010	55.50	100	Water Hyacinth, Alligator weed, Giant Cutgrass
2014	68	90.6	Water Hyacinth, Alligator Weed

Herbicide applications in the past have been applied at the following rates:

2, 4-D (Platoon): Used at a rate of 0.50 gallons per acre to treat water hyacinth and American lotus.

Glyphosate (Aquamaster, Aquastar, etc.): Used at a rate of 0.75 gallons per acre to treat alligator weed, water hyacinth, American lotus, giant and common salvinia during active growing period.

Diquat (Reward, Knockout): Used at a rate of 0.75 gallons per acre to treat water hyacinth, and giant and common salvinia during the slower growing period or winter months.

Imazapyr or Imazamox: Used at a rate of 0.5 gal/acre to treat alligator weed

Surfactant is added at a rate of 1:4 (surfactant: herbicide) for all herbicides.

Future herbicide applications for the treatment of giant and common salvinia will be in accordance with the LDWF Aquatic Herbicide Application Procedures effective March 18, 2013. Schedule and rates listed below:

April 1-October 31: glyphosate (0.75 gal/acre) and diquat (0.25 gal/acre) with Aqua King Plus (0.25 gal/acre) and Air Cover (12 oz. /acre) surfactants

November 1 – March 31: diquat (0.75 gal./acre) and a non-ionic surfactant (0.25 gal/acre)

History of Regulations

Recreational – Recreational fishing is currently regulated under statewide regulations.

The recreational fishing regulations may be viewed at the link below:
http://www.wlf.louisiana.gov/fishing/regulations

A 15”- 19” slot limit on black bass was in effect on Lake Concordia from 1991-2001. In 2001, area bass fishermen circulated a petition to have the slot regulation removed. Subsequent review of age and growth data showed a decline in growth rates of bass during the years when the slot limit was in effect. LDWF took the appropriate action to have the size restriction removed in 2002. Since that time, age and growth data have shown bass growth rates have improved.

Commercial

In September 1991, the Louisiana Wildlife and Fisheries Commission prohibited the use of gill nets, trammel nets and fish seines in Lake Concordia. (Promulgated in acc. With R.S. 56:22(B)

The commercial fishing regulations may be viewed at the link below:
http://www.wlf.louisiana.gov/fishing/regulations

Drawdown history

No drawdowns have been conducted on Lake Concordia.

Fishing closure

Fishing has not been closed on Lake Concordia.

Fish kills / Disease History, LMBV

LMBV was confirmed to be present in 2001, when a minor fish kill occurred; there have been occasional low dissolved oxygen related fish kills of most species, primarily in late summer. No severe fish kills have occurred.

Contaminants / Pollution

There are active fish consumption advisories for Lake Concordia. Annual updates can be found at the DEQ and LDWF links below.
http://www.deq.louisiana.gov/portal/tabid/2201/Default.aspx
http://www.wlf.louisiana.gov/fishing/fish-consumption-advisories

Water quality

Water quality is generally good (moderately eutrophic). Dense algal blooms in mid to late summer are becoming more common in recent years as new development along the lake shoreline has increased dramatically in the last decade, leading to increased nutrient inflow from septic systems, lawn fertilizers, etc.

Water Level

Normal pool stage is 48.5 ft. MSL. Water levels appeared to stay below pool through most of 2006-2007 and 2010-2011 due to lower than normal rainfall. There is no recording water level gauge on the lake. Water fluctuations of 1’ to 2’ below pool elevation are common during the summer and fall months.

Biological

Fish samples

History - Lake Concordia was sampled seven times with rotenone between 1986 and 1997; since the early 1990's it has been sampled annually by electro-fishing, gill netting and shoreline seining. The complete sampling history is found in Table 2.

Table 2. Fisheries sampling on Lake Concordia, Louisiana, 1986 - 2017.

LAKE CONCORDIA SAMPLING	
1986	Rotenone - 2 sets
1987	Rotenone - 2 sets
1988	Rotenone - 2 sets
1989	Rotenone – 2 sets; Electrofishing – 4 stations (fall)
1990	Electrofishing – 4 (spring & fall); seine samples – 4
1991	Electrofishing – 4 stations in spring & 3 in fall; seine – 3
1992	Rotenone – 2 sets; Electrofishing – 4 (spring & fall); seine – 3
1993	Electrofishing – 4 (spring & fall); seine – 3
1994	Electrofishing – 4 (spring & fall); seine – 3; gill net – 1
1995	Rotenone – 2; Electrofishing – 4 (spring & fall); seine – 3
1996	Electrofishing – 4 (spring & fall); seine – 3
1997	Rotenone – 3; Electrofishing – 4 (spring & fall); seine – 3; gill net – 3
1998	Electrofishing – 4 (spring & fall); seine – 3; gill net - 3
1999	Electrofishing – 4 (spring & fall); seine – 3; gill net – 3
2000	Electrofishing – 4 (spring & fall); seine – 3
2001	Electrofishing – 4 (spring & fall); seine – 3; gill net – 3
2002	Electrofishing – 4 (spring & fall); seine – 3
2003	Electrofishing – 4 (spring & fall); seine – 3; gill net – 3
2004	Electrofishing – 4 (spring & fall); seine – 3
2005	Electrofishing – 4 (spring & fall); seine – 3; gill net – 3
2006	Electrofishing – 4 (spring & fall); seine – 3
2007	Electrofishing – 4 (spring & fall); seine – 3
2008	Electrofishing – 4 (spring & fall); seine – 3
2009	Electrofishing – 4 (spring & fall); seine – 3

2010	Electrofishing – 4(summer- Age and Growth / Mortality)
2011	Electrofishing – 4 (spring & fall –Age and Growth / Mortality)
2012	Electrofishing – 4 (spring & fall –Age and Growth / Mortality)
2013	No sampling scheduled
2014	No sampling scheduled
2015	No sampling scheduled
2016	No sampling scheduled
2017	Electrofishing scheduled – 4 (spring & fall)

Lake records

No official records are kept for Lake Concordia.

Stocking History

Fish stocking began in 1977 in Lake Concordia when hybrid striped bass were introduced. Hybrid striped bass were stocked annually for the next sixteen years from 1977 until 1992. Since then hybrid striped bass have been stocked sporadically. Florida LMB stocking began in 1989 and were stocked annually until 2003. Florida LMB stocking continues periodically. See Table 3 below.

Table 3. Fish stocking records for Lake Concordia, Louisiana, from 1977 until present.

YEAR	HYBIRD SPRIPED BASS	FLORIDA LARGEMOUTH BASS
1977	10,000	
1978	10,000	
1979	10,540	
1980	10,000	
1981	10,000	
1982	10,522	
1983	10,000	
1984	10,000	
1985	10,000	
1986	15,000	
1987	10,000	
1988	10,000	
1989	10,000	10,000
1990	5,900	109,000
1991	10,516	100,750
1992	10,000	101,894
1993		80,250

1994	160,000 fry	108,308
1995	100,000 fry	155,500 fry
1996		100,000
1997		100,000
1998		100,000
1999		100,000 fry/120,000 fingerlings
2000		96,380
2001		104,460
2002	11,400	101,274
2003		10,036
2005	10,949	11,184
2006	11,684	
2007	11,001	11,036
2009	10,874	851 Phase II
2010		47,015
2011		10,808
2013	10,010	
2014		21,412

Genetics

Genetic testing was first conducted in 1994 and has been conducted periodically to 2012. Significant numbers of LMB contain Florida genes. The complete record of genetic testing is found in Table 5.

Table 5. Genetic analysis of the LMB in Concordia Lake, Louisiana.

Year	% Northern	% Florida	% Hybrid	% Florida Influence
1994	87	4	9	13
1995	80	3	17	20
1997	65	5	30	35
1999	62	4	34	38
2002	71	3	26	29
2005	73	5	22	27
2006	72	5	23	28
2010	76	18	6	24
2011	62	28	10	38
2012	69	5	26	31

Species profile

As per Freshwater Fishes of Louisiana by Dr. Neil H. Douglas, fish species listed below have been collected or are likely to occur in Lake Concordia.

FRESHWATER FISHES CONCORDIA LAKE

Lamprey Family, PETROMYZONTIDAE
Southern brook lamprey, *Ichthyomyzon gagei* Hubbs and Trautman
Chestnut lamprey, *Ichthyomyzon castaneus* Girard

Gar Family, LEPISOSTEIDAE
Spotted gar, *Lepisosteus oculatus* (Winchell)
Longnose gar, *Lepisosteus osseus* (Linnaeus)
Shortnose gar, *Lepisosteus platostomus* Rafinesque
Alligator gar, *Lepisosteus spatula* Lacépède

Bowfin Family, AMIIDAE
Bowfin, *Amia calva* Linnaeus

Herring Family, CLUPEIDAE
Gizzard shad, *Dorosoma cepedianum* (Lesueur)
Threadfin shad, *Dorosoma petenense* (Günther)

Minnow Family, CYPRINIDAE
Blacktail shiner, *Cyprinella venusta* (Girard)
Common Carp, *Cyprinus carpio* Linnaeus
Cypress minnow, *Hybognathus hayi* Jordan
Striped shiner, *Luxilus chrysocephalus* Rafinesque
Golden shiner, *Notemigonus crysoleucas* (Mitchill)
Emerald shiner, *Notropis atherinoides* Rafinesque
Taillight shiner, *Notropis maculatus* (Hay)
Weed shiner, *Notropis texanus* (Girard)
Mimic shiner, *Notropis volucellus* (Cope)
Bullhead minnow, *Pimephales vigilax* (Baird and Girard)
Creek chub, *Semotilus atromaculatus* (Mitchill)

Sucker Family, CATOSTOMIDAE
Lake chubsucker, *Erimyzon sucetta* (Lacépède)
Smallmouth buffalo, *Ictiobus bubalus* (Rafinesque)
Bigmouth buffalo, *Ictiobus cyprinellus* (Valenciennes)
Black buffalo, *Ictiobus niger* (Rafinesque)
Spotted sucker, *Minytrema melanops* (Rafinesque)

Freshwater Catfish Family, ICTALURIDAE
Black bullhead, *Ameiurus melas* (Rafinesque)
Yellow bullhead, *Ameiurus natalis* (Lesueur)
Tadpole madtom, *Noturus gyrinus* (Mitchill)
Channel Catfish, *Ictalurus punctatus* (Rafinesque)
Flathead Catfish, *Pylodictis olivaris* (Rafinesque)

Pike Family, ESOCIDAE
Grass pickerel, *Esox americanus vermiculatus* (Lesueur)
Chain pickerel, *Esox niger* (Lesueur)

Pirate Perch Family, APHREDODERIDAE
Pirate perch, *Aphredoderus sayanus* (Gilliams)

Killifish Family, CYPRINODONTIDAE
Golden topminnow, *Fundulus chrysotus* (Günther)
Starhead topminnow, *Fundulus nottii* (Agassiz)
Blackstripe topminnow, *Fundulus notatus* (Rafinesque)
Blackspotted topminnow, *Fundulus olivaceus* (Storer)

Livebearer Family, POECILIIDAE
Western mosquitofish, *Gambusia affinis* (Baird and Girard)

Silverside Family, ATHERINIDAE
Brook silverside, *Labidesthes sicculus* (Cope)
Mississippi silverside, *Menidia audens* (Hay)

Temperate Bass Family, PERCICHTHYIDAE
White bass, *Morone chrysops* (Rafinesque)
Yellow bass, *Morone mississippiensis* Jordan and Eigenmann
Hybrid Striped bass, *Morone chrysops X M. saxatilis*

Sunfish Family, CENTRARCHIDAE
Banded pygmy sunfish, *Elassoma zonatum* (Jordan)
Green sunfish, *Lepomis cyanellus* (Rafinesque)
Warmouth, *Lepomis gulosus* (Cuvier)
Orangespotted sunfish, *Lepomis humilis* (Girard)
Bluegill, *Lepomis macrochirus* (Rafinesque)
Dollar sunfish, *Lepomis marginatus* (Holbrook)
Longear sunfish, *Lepomis megalotis* (Rafinesque)
Redear sunfish, *Lepomis microlophus* (Günther)
Redspotted sunfish, *Lepomis miniatus* (Valenciennes)
Bantam sunfish, *Lepomis symmetricus* (Forbes)
Florida largemouth bass, *Micropterus floridanus* (Lacépède)
Northern largemouth bass, *Micropterus salmoides* (Lacépède)
White crappie, *Pomoxis annularis* (Rafinesque)
Black crappie, *Pomoxis nigromaculatus* (Lesueur)

Perch Family, PERCIDAE
Bluntnose darter, *Etheostoma chlorosomum* (Hay)
Swamp darter, *Etheostoma fusiforme* (Girard)
Slough darter, *Etheostoma gracile* (Girard)
Cypress darter, *Etheostoma proeliare* (Hay)
Logperch, *Percina caprodes* (Rafinesque)

Drum Family, SCIAENIDAE
Freshwater drum, *Aplodinotus grunniens* Rafinesque

Pipefish Family, Syngnathidae
Gulf pipefish, *Syngnathus scovelli* (Evermann and Kendall)

Threatened/endangered/exotic species

No threatened or endangered species have been documented. A landlocked population of Gulf pipefish, *Syngnathus scovelli* occurs in Lake Concordia, and are occasionally collected or reported.

Creel

Access Point Creel Surveys were conducted on Lake Concordia in 1990, 1991, 1994, 1996, 1997, 1998, 2002, 2003 and 2010.

Hydrological changes

Lake Concordia was completely cut off from flood water exchange with the Mississippi River with the construction of federal flood control levees in the 1920's.

Water Use

Hunting

Hunting is limited due to residential development along the shoreline. Several duck blinds are located in the extreme upper end of the lake; various waterfowl species can be observed on the lake during winter.

Recreational water sports

Recreational water sports are very popular on Concordia Lake and include water skiing, personal watercraft, party barges, sail boats and other recreational boats. The ends of the lake are heavily covered with cypress trees and stumps, but the main body of the lake is free of obstructions for skiers and recreational boaters.

Fishing

Concordia Lake is utilized extensively for recreational fishing -- primarily for largemouth bass. Numerous bass tournaments are held annually. Commercial fishing for channel catfish is conducted by a small number of fishermen who primarily utilize small hoop nets.

Swimming

Swimming occurs in the lake. There are no beaches or designated swimming areas. The majority of swimming occurs from private piers and boat docks.

Irrigation

Agriculture irrigation does occur and several pumps were observed in the lake during the summer/fall of 2011. The volume of water drawn from the lake is not monitored.

Appendix I –

Water Control Structure Authority

RESOLUTION

CONCORDIA PARISH POLICE JURY

WHEREAS, at the request of this Police Jury, the Department of Public Works, State of Louisiana, has made a preliminary survey and an estimate of the cost of constructing a control structure in the Cocodrie Outfall Channel for Lake Concordia in Concordia Parish;

WHEREAS, this Police Jury has no funds available with which to finance the construction itself, but can and will make all utility and other relocations made necessary by the project;

WHEREAS, all necessary servitudes and rights-of-way have been acquired by this Police Jury and the titles thereto are valid and indefeasible.

NOW, THEREFORE, BE IT RESOLVED by the Concordia Parish Police Jury in regular session assembled on this 25th day of August, 1975, that the Department of Public Works, State of Louisiana, be and hereby is requested to prepare the plans and specifications, award a contract in its own name and at its own expense for the construction of the said control structure, and furnish the engineering supervision during the progress of the work.

BE IT RESOLVED that said Department of Public Works be and hereby is assured that all necessary servitudes and rights-of-way have been acquired by this Police Jury and the titles thereto are valid and indefeasible, and that this Police Jury will and hereby does assume complete responsibility for the operation, maintenance and upkeep of the control structure upon completion of the project.

BE IT RESOLVED that this Police Jury does hereby agree to remove, for the duration of the work and thereafter replace, the two house trailers at the south end of the right-of-way, the water line, the gas line and the hurricane wire fence which must be temporarily relocated to accommodate the project, and to reconstruct the base and surface of the roadway and ramps after the project is completed.

BE IT RESOLVED that said Police Jury does hereby agree to save and hold the said Department of Public Works, its officers, agents and employees, harmless from any liability or claim for damages arising out of the project, or the failure of any servitude or right-of-way, including, but not limited to, liability or claim for damages arising out of the negligence of said Department, its officers, agents or employees, and agree to defend any suit brought against the Department as a result of this project.

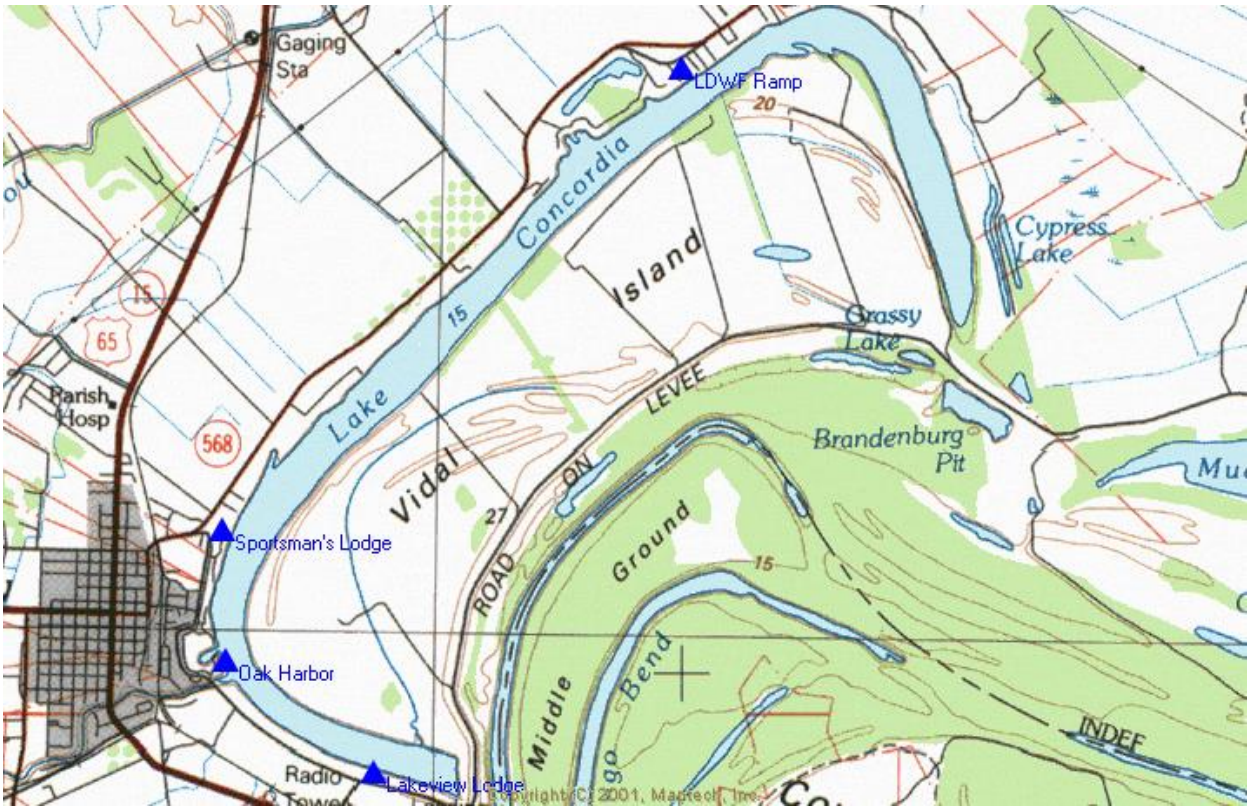
L. F. Sledge
SECRETARY

Rodney J. Crouch
PRESIDENT

Copies of this Resolution will be mailed to the Louisiana Department of Public Works Offices in Baton Rouge, Monroe, and Ferriday, LA.

Appendix II-

Boat Ramp Locations



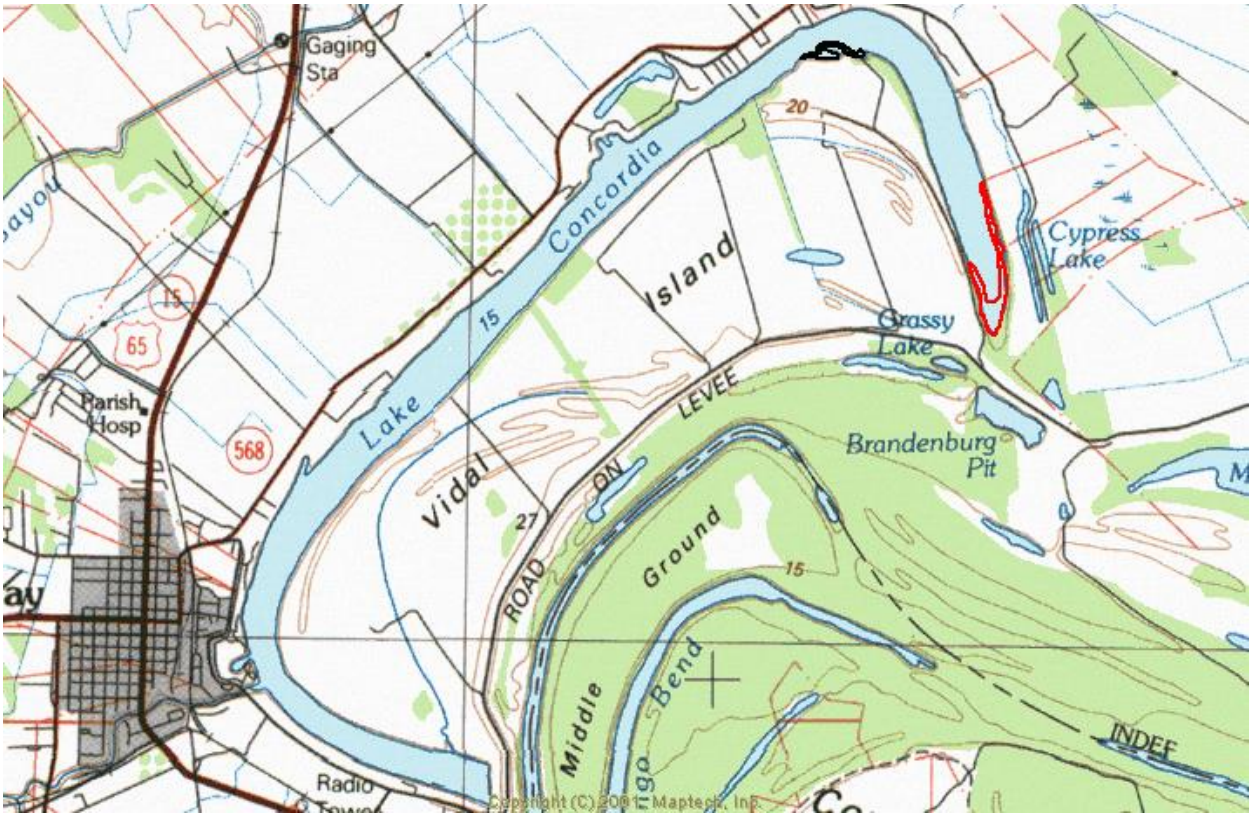
APPENDIX III –

VEGETATION TYPEMAP

2005 Lake Concordia Aquatic Vegetation Type Map

Dave Hickman

Lake Concordia was about 2 feet below pool stage at the time of the survey in late summer of 2005. The northeast end of the lake was covered in a mixture of coontail and southern naiad from shore to a depth of about 3 feet. Two shallow (< 3 feet) coves and a point on the inside bend of the lake were partially covered in southern naiad. There were a small number of water hyacinths scattered throughout the lake.



Red highlight = 28 ac, 100% coverage: ½ coontail; ½ southern naiad
Black highlight = 8 ac, 50% coverage: southern naiad